

**Compliance History  
for  
The Dow Chemical Company  
Salzburg Landfill  
MID 980 617 435**

**November , 2008**

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| 6/29/1987  | Michigan Department of Natural Resources (MDNR) Inspection – no violation identified.   |
| 8/19/1987  | MDNR Inspection – no violation identified.  |
| 11/30/1987 | MDNR Inspection – no violation identified.  |
| 3/25/1988  | MDNR Inspection.  |
| 4/5/1988   | Letter of Warning (LOW) citing violation identified during 3/25/1988 Inspection.        |
| 4/5/1988   | Facility Returned to Compliance (RTC) from violation noted during 3/25/1988 Inspection. |
| 6/27/1988  | MDNR Inspection – no violation identified.  |
| 7/12/1988  | MDNR Inspection – no violation identified.  |
| 7/27/1988  | MDNR Inspection – no violation identified.  |
| 8/25/1988  | MDNR Inspection – no violation identified.  |
| 12/22/1988 | MDNR Inspection – no violation identified.  |
| 3/21/1989  | MDNR Inspection – no violation identified.  |
| 5/23/1989  | MDNR Inspection – no violation identified.  |
| 7/20/1989  | MDNR Inspection – no violation identified.  |
| 11/3/1989  | MDNR Inspection – no violation identified.  |
| 3/30/1990  | MDNR Inspection – waste material exposed without adequate daily cover.                  |
| 4/5/1990   | LOW citing violation identified during 3/30/1990 Inspection.                            |
| 4/16/1990  | Dow response to LOW dated 4/5/1990.   |
| 6/19/1990  | MDNR Follow-up Inspection to 3/30/1990 Inspection.                                      |
| 7/9/1990   | RTC letter for the 3/30/1990 Inspection.  |
| 9/28/1990  | MDNR Inspection – no violation identified.  |

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| 12/10/1990 | MDNR Inspection – waste material exposed with inadequate daily cover and landfill inspection not at required frequency.  |
| 1/17/1991  | LOW citing violation identified during 12/20/1990 Inspection.  |
| 2/7/1991   | MDNR Follow-up Inspection to 12/10/1990.   |
| 2/14/1991  | Dow response to LOW dated 1/17/1991.   |
| 3/18/1991  | RTC letter for the 12/20/1990 Inspection.  |
| 6/6/1991   | MDNR Inspection – no violation identified.   |
| 6/18/1992  | MDNR Inspection – no violation identified.   |
| 12/22/1992 | MDNR Inspection – no violation identified.   |
| 3/27/1992  | MDNR Inspection – Waste material exposed and daily cover inadequate.   |
| 3/31/1992  | Dow response to inspection dated 3/27/1992.  |
| 4/16/1992  | LOW/RTC letter for the 3/27/1992 Inspection.   |
| 6/30/1993  | MDNR Inspection – no violation identified.   |
| 9/17/1993  | MDNR Inspection – no violation identified.   |
| 9/27/1993  | MDNR Inspection – no violation identified.   |
| 12/6/1993  | MDNR Inspection – no violation identified.   |
| 3/10/1994  | MDNR Inspection – no violation identified.   |
| 5/4/1994   | MDNR Inspection – no violation identified.   |
| 9/30/1994  | MDNR Inspection – no violation identified; however, the In Compliance (IC) letter referenced the disposal of lime kiln fire bricks containing chromic acid in Cells 40-43 as solid waste rather than hazardous waste discovered during a 9/29/1993 Inspection of the Dow Ludington facility. |
| 11/30/1994 | MDNR Inspection – no violation identified; however, the IC letter referenced the lime kiln brick disposal issue.   |
| 1/31/1995  | MDNR Inspection – no violation identified; however, the IC letter referenced the lime kiln brick disposal issue.   |
| 5/24/1995  | MDNR Inspection – no violation identified; however, the IC letter referenced the lime kiln brick disposal issue.   |
| 8/1/1995   | MDNR Inspection – no violation identified; however, the IC letter referenced the lime kiln brick disposal issue.   |

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| 11/16/1995 | Notice of Violation/Proposed Consent Order regarding the lime kiln brick disposal issue sent to Dow.  |
| 12/5/1995  | Michigan Department of Environmental Quality (MDEQ) Inspection – no violation identified.   |
| 3/18/1996  | MDEQ Inspection – no violation identified.  |
| 6/18/1996  | MDEQ Inspection – no violation identified.  |
| 8/21/1996  | MDEQ Inspection – no violation identified.  |
| 10/8/1996  | Consent Order signed resolving the lime kiln brick disposal issue; resolution included additional financial assurance and a restrictive covenant, increased leachate and groundwater monitoring requirements, and construction of a more substantial final cover for solid waste Cells 40-43. |
| 12/18/1996 | MDEQ Inspection – no violation identified.  |
| 3/7/1997   | MDEQ Inspection – no violation identified.  |
| 6/5/1997   | MDEQ Inspection – no violation identified.  |
| 8/20/1997  | MDEQ Inspection – no violation identified.  |
| 12/11/1997 | MDEQ Inspection – no violation identified.  |
| 3/20/1998  | MDEQ Inspection – no violation identified.  |
| 6/24/1998  | MDEQ Inspection – no violation identified.  |
| 9/15/1998  | MDEQ Inspection – no violation identified.  |
| 11/25/1998 | MDEQ Inspection – no violation identified.  |
| 6/16/1999  | MDEQ Inspection – no violation identified.  |
| 12/8/1999  | MDEQ Inspection – no violation identified.  |
| 6/21/2000  | MDEQ Inspection – no violation identified.  |
| 12/14/2000 | MDEQ Inspection – no violation identified.  |
| 8/15/2001  | MDEQ Inspection – no violation identified.  |
| 12/18/2001 | MDEQ Inspection – no violation identified.  |
| 9/19/2002  | MDEQ Inspection – no violation identified.  |
| 12/17/2002 | MDEQ Inspection – no violation identified.  |
| 9/23/2003  | MDEQ Inspection – no violation identified.  |

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| 12/17/2003 | MDEQ Inspection – no violation identified. |
| 6/23/2004  | MDEQ Inspection – no violation identified. |
| 12/7/2004  | MDEQ Inspection – no violation identified. |
| 6/23/2005  | MDEQ Inspection – no violation identified. |
| 11/2/2005  | MDEQ Inspection – no violation identified. |
| 9/19/2006  | MDEQ Inspection – no violation identified. |
| 1/31/2007  | MDEQ Inspection – no violation identified. |
| 8/1/2007   | MDEQ Inspection – no violation identified. |
| 12/12/2007 | MDEQ Inspection – no violation identified. |
| 9/16/2008  | MDEQ Inspection – no violation identified. |

## SECTION XI

### CORRECTIVE ACTION

## Corrective Action

This section summarizes the current status of the Part 111/RCRA corrective actions that have been identified for the Salzburg Landfill. Details showing the locations of the landfill cells or Solid Waste Management Units (SWMUs), groundwater and stormwater monitoring features can be found in Section II.A, Facility Description, Section II.P., Topographic Maps, Section IV, Environmental Assessment, and Section V, Environmental Monitoring.

There currently is no corrective action being conducted. Historically, corrective action has been conducted under consent orders or consent agreements between the Michigan Department of Environmental Quality (formerly Department of Natural Resources) and Dow. Dow believes that all historical requirements to conduct corrective action have been resolved. Some monitoring activities have continued as a result of these historical agreements, and the results of this monitoring indicate that corrective action has been completed. A revision to the long-term environmental monitoring program has been proposed in Section V, Environmental Monitoring, Attachment 1, Sampling and Analysis Plan.

## Consent Orders or Agreements

A chronology of agreements between the MDEQ and Dow is described below.

### Historical Overview

A construction permit was issued to Dow on September 15, 1981. Operation of the Landfill began with Dow's first operating license, issued on February 2, 1982. A concern over monitoring data<sup>1</sup> led to temporary cessation of operations pursuant to an order dated April 12, 1983. A consent agreement to address the concern was signed the following month (May 17, 1983),<sup>2</sup> and Dow resumed full operation of the Landfill on October 17, 1983.

In August 1983, dilute leachate was detected in monitoring wells outside the landfill cells at concentrations in parts per billion of some organic constituents. It was determined that leachate was coming from a gravel bed located in the leachate collection lines from Cells 6, 7, and 8, due to faulty manhole connections. Manholes were subsequently eliminated from the system and

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<sup>1</sup> In March 1983, routine monthly monitoring indicated constituents in the liner failure detection system. Upon further investigation, it was determined that the landfill liner had not failed, but rather leachate had been siphoned into the liner failure detection sump from the leachate collection sump. The source had been traced to specific leachate collection sump maintenance activities. The problem was corrected by replacement of a faulty leachate pump.

<sup>2</sup> A copy of the April 12, 1983 Cease and Desist Order and the May 17, 1983 Consent Agreement are attached to this section for reference.

replaced with short runs of pipe. Dewatering wells were used to flush leachate from the gravel bed.<sup>3</sup>

In September 1983, perchloroethylene was detected in the liner failure detection system of the landfill. Other organic constituents of leachate were not found in the samples. The liner failure detection sump was drained and hydro-blasted, and the piping and sample ports were flushed. It was determined that contamination of the sump was an isolated incident, but the exact cause was not found. Additional testing was added to the then-current environmental monitoring plan.

The three issues described above led to implementation of the Contingency Plan for Salzburg Landfill. No contamination of groundwater outside the facility occurred from these incidents. Further details may be found in the 1991 Salzburg Landfill Reapplication, Appendix 11, Failure Mode Assessment.

MDEQ was kept informed of the on-going corrective actions conducted. Per a memo from Jim Sygo to Phil Roycraft (MDEQ), dated December 23, 1983, the MDEQ deemed the May 17, 1983 Consent Agreement as being satisfied.

In 1995, Dow received a Notice of Violation for disposal of hazardous waste kiln bricks in the non-hazardous waste cells. A Consent Order (No. 111-07-115-06-96) was negotiated and became effective on November 8, 1996. Conditions of the Order were met and Dow submitted a request for termination on February 20, 1997. The Order was terminated on April 11, 1997. No releases to the environment occurred as a result of this incident. A copy of the 1996 Order and the 1997 Order Termination is included in Appendix XI-1.

The most recent event at Salzburg Landfill that may be considered as a corrective action was an investigation to identify a cause for elevated inorganic constituents in various groundwater monitoring wells utilized in the Part 115 (non-hazardous) Groundwater Monitoring Plan. Evaluation of the data resulted in the preparation and submittal of a Response Action Plan (RAP) on July 6, 2005. Hydrogeologic and geophysical field investigations were conducted to determine if the origin of the anomalous data was an off-site source or the landfill. The conclusions indicated that historical brining of roadways caused seepage and accumulation of inorganics (associated with brining) in clay soils below a drainage ditch in the area. The constituents had dissolved into groundwater and were detected in samples in the nearby monitoring wells. Therefore, it was concluded that the non-hazardous landfill cell was not the source. A recommendation was made by Dow in the *1<sup>st</sup> Semiannual 2006, Part 115 Monitoring Report*, (URS) to eliminate monitoring of the brine-related inorganic constituents and to include monitoring for volatile and semi-volatile organic compounds. These changes have also been

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<sup>3</sup> Monitoring of fluorescent dye for one of the landfill cells continues as a result of detectable levels of dye found in the system in 1983. The MDEQ indicated in a letter dated January 9, 1985, that since all organic constituents were non-detect, Dow could cease monitoring the gravel flush bed system once five sample results were also not quantifiable for the dye. The organics have remained non-detect since MDEQ's January 9, 1985 approval letter. Dow requested, in a letter dated February 28, 2005, approval to discontinue the fluorescent dye sampling of the water extracted from the gravel bed flushing system. The levels of fluorescent dye have remained consistently low since first quarter 1985, however, the levels are not non-detect. Dow does not believe that the fluorescent dye sampling of the gravel bed flush well provides worthwhile information to assist with monitoring the landfill for early detection of a release. Dow did not include sampling and analysis of the flush bed in the SAP, Appendix 1 of Section V, Environmental Monitoring Plan. Cessation of flushbed operation has also been recommended by Dow.

included in this license reapplication in Section V., Environmental Monitoring, Sampling and Analysis Plan. The *RAP Summary Report* (URS) was submitted on July 28, 2006.